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ON THE LARVÆ OF ATOMACERA AND SOME OTHER SAW-FLIES.

BY HARRISON G. DYAR.

Atomacera * *desmodii*, sp. nov.

Male agrees with Say's description of *A. debilis*, but is smaller, length 2 mm. or less. Four submarginal cells are present; the third joint of antennæ does not taper to tip, but is somewhat thickened on its basal fourth.

Female agrees with Norton's description of *A. ruficollis*, but the thorax above is wholly yellow red, without any black spot and the third joint of antennæ is more thickened. Length 4 mm. Closely allied to *A. ruficollis* Nort., but the third submarginal cell has its bordering veins parallel, while in *ruficollis* they are divergent. Larva, last three stages observed.

Stage.—Head .6 mm. As in the next, translucent yellow, the food green, shining; spinous tubes black walled.

Penultimate stage.—Head .8 mm., pale brown, eyes black. Body as in the last stage, but more yellowish, yellow except for the green food, the tubercles only very faintly shaded; nothing conspicuous but the black-walled tubes in twelve transverse rows which make the larva look shortly spiny. Thoracic feet stumpy, thorax a little widened.

Last stage.—Head round, brownish green, shining, ocellus in a black spot; antennæ rudimentary; width 1 mm. Body somewhat flattened, the subventral region protruding, fluted; feet on joints 6 to 12 and 13, rather slender. Segments with four rounded areas on each side like short tubes on the posterior third of the segment, subdorsal, lateral, stigmal (posterior) and subventral. These tubes are hollow, colorless, dusky edged, erect, and from the top of each a round drop exudes when the larva is irritated. Before the subdorsal tube on annulet 1 is a tubercle with a seta; another on annulet 2, also before the tube, consisting of two tubercles conjoined or separate; below the subdorsal tube and touching it a large tubercle with one seta; the stigmal tube arises from the upper edge of a large tubercle with one

* Mr. Ashmead's genus *Micrarge* is a synonym of *Atomacera*. His statement that the third joint of antennæ is furcate is an error, as no male of *A. ruficollis* is known. *A. debilis* Say is probably the male.

seta; the subventral tube from a large tubercle forming the projection of the subventral ridge on which are several setæ; foot with small setæ. All the tubercles are shaded with dusky black except in their centers. Segments obscurely 2-annulate, the annulets minutely granular in the center. Body otherwise green, shining, smooth. The glandular tubes form a row on the anterior edge of the cervical shield and on joint 13, fringing the body; the anal plate is smooth.

Cocoon.—Loose, irregular, of yellowish brown somewhat reticular silk. No ultimate stage, the glandular tubes becoming shrunken on spinning.

Food-plant.—Desmodium. Found by Mr. A. Busck and the writer in Alexandria Co., Virginia. Chain Bridge, Va. (Busck); Rosslyn, Va. (Dyar).

***Atomacera ruficollis* Norton.**

No males have been bred, but they will probably prove to be *A. debilis* Say when obtained, as originally suggested by Walsh.

The following notes are taken from the books of the Department of Agriculture (no. 3198) and were written by A. Koebele.

"August 24, 1883, found a small saw-fly larva on *Hibiscus moscheutos* L., sometimes two or three on one leaf. They are about 10 to 12 mm. in length, of a light green color on the upper side and almost white on the under side; head black; a transverse row of short black spines on each segment, longest in front; stigmata black. There is also a variety where the spines are not black, but evidently the same insect. Spun a quadrangular cocoon."

In the preserved alcoholic material the head is round, prominent, brown black, a space in clypeus and mouth whitish; width 1.1 mm. Antennæ rudimentary, not joined. Body with segmentary rows of stout, rather long, black tubes, somewhat longer on the thorax. These are longer than in *A. desmodii*. Anal plate rectangular, dark brown except at tip. Thoracic feet large, the thorax a little enlarged laterally; abdomen smaller, somewhat flattened, its feet small, on joints 6 to 12 and 13. Feet all pale. There are a few minute setæ which can hardly be deciphered in the specimens; probably they are as in *A. desmodii*. In the pale variety mentioned above, the head is brown over the vertex, a quadrangular patch in clypeus and eye black. Body tubes colorless. Both species of *Atomacera* rest flat on the venter like slugs, eating the parenchyma of the leaf from below. They are slightly gregarious.

Priophorus irregularis, sp. nov.

Male. Length 4.5 mm.; antennæ long and slender, third joint shorter than fourth, finely pilose, joints 3 to 5 a little expanded at the apices. Face on each side of the ocelli channeled; a flat ridge passing down between antennæ; claws with a tooth at middle. Shining black, palpi, knees and tibiæ whitish except the tip of the middle and hinder tibiæ; first joint of tarsi whitish at base, the rest black. Wings hyaline at tip, the basal three-fourths smoky black. Outer cross nervure of lower under wing cell received at middle of upper cell. One male, Weirs, New Hampshire.

Possibly this is *P. æqualis* Nort. (just as *P. solitaris* Dyar may be *P. simplicicornis* Nort.) but my specimen does not coincide well with the description.

Larvæ, last two stages observed.

Penultimate stage.—Head wider than high, mouth projecting, shining black with a few hairs; width 1 mm. Body of uniform width, rather wider than high, slightly smaller at both extremities; a large, conspicuous, black anal plate. The two rows of low, obscure but rather large watery tubercles bear evident stiff, recurved simple white hairs long on the posterior row, short on the anterior one. Body not distinctly annulated, pale honey yellow, shading into orange on joints 2-3 and 12-13. A row of large, rounded, segmental, subdorsal black spots and a similar smaller subventral row. Abdominal feet on joints 6 to 11 and 13, the feet slightly spreading, not conspicuous from above, pale or blackish tinted.

Last stage.—Head black; width 1.2 mm. Body rather flat, with many white hairs from irregular warts in two transverse rows. Anterior row of hairs moderate, posterior larger and from larger tubercles. The segments are 3-annulate but the anterior annulet bears very few or no hairs. Body whitish, joints 2-3 and 11-12 orange yellow. A row of large black subdorsal spots on joints 2 to 12 over the front row of hairs; anal plate black, large. Warts colorless, transparent. Rarely there are traces of small black dots subventrally. Tracheal line white; feet colorless; hairs all white, recurved. Later the subdorsal dots become very large, the subventral ones distinct or absent, white fat granules appear dorsally except at the vessel. The spots may extend from joints 3 to 13.

Found on smooth willow at Woods Holl, Mass., and Weirs, N. H.; in the latter place there were hundreds of larvæ on one bush which

they had defoliated. Usually only a few on a bush, sitting flat on the venter on the under side of the leaf. The cocoon is spun between leaves. No ultimate stage.

Larva referred to as "N," Can. Ent., XXVII, 340.

***Pteronus ostryæ* Marlatt.**

What I consider to be this species occurred to me on *Carpinus Virginiana* in Maryland, but it was not bred. The name has probably been given after the wrong tree.

Stage I.—Eating a hole in the middle of the leaf, the body curled in S-shape. Head smoky testaceous, a dark lateral shade, eye black, shining; width .4 mm. Body translucent whitish, finely annulate, shining, food green; anal segment swollen; feet on joints 6 to 11 and 13, not used.

Stage II.—Head whitish, slightly testaceous, eye black with a shade behind; width .7 mm. Body colorless, the food green, finely annulate; joint 13 enlarged; feet on joints 6 to 11 small; antennæ a rudimentary point.

Stage III.—Head rounded, greenish, shining, a black shade on each side and an elongate one on the vertex; width .1 mm. Body translucent green, the segments about 6 annulate; thoracic feet clear with black marks at the bases; abdominal feet short; joint 13 swollen, with a pair of thick, swollen-tipped clear anal prongs. Neither tracheal line nor dorsal vessel contrasted.

Stage IV.—Head pale brownish green, a black shade behind the ocellus and a linear one on the vertex posteriorly; with 1.3 mm. Segments rather obscurely 6-annulate, translucent green, dorsal vessel not showing at all, tracheal line fine. Feet on joints 6 to 11 distinct, small, joints 12-13 a little enlarged, the bulbous prongs brown at tip. Thoracic feet clear, testaceous at base.

Stage V. has been briefly described JOURN. N. Y. ENT. SOC. V, 26.

***Harpiphorus tarsatus* Say.**

A local form of this species occurs on Long Island, N. Y., in which the larvæ differ from the form that I have previously described in possessing the white pruinose coating. This is, doubtless, the true *tarsatus*, as the flies have the hinder tibiæ entirely black as described and not more or less pale on the basal portion as in those bred from the non-pruinose larva.

Several stages observed. At first the larvæ are pruinose with no black marks except the head and anal plate. Gradually these appear.

Last stage.—Head black, mouth yellow, a slight woolly coating. Body yellow subventrally and narrowly on joint 2 anteriorly; dorsally to spiracles whitish with two per segment subdorsal and one large lateral black spot, obscurely connected into a square marking leaving annulets 2 and 4 pale. The subdorsal spots are on annulets 5-6-1 and 3-4; the lateral on 6-1-2. Segments 6-annulate. Anal plate black; joint 13 collared in front; spiracle on annulet 2.

Ultimate stage.—Heads 1.5, 2.0 and 2.3 mm. Very shining and banded. Head jet black; body bright ochre subventrally, on feet and joint 2 anteriorly. Dorsum to spiracles light blue on annulets 2 and 4, on 4 the whole annulet, but on 2 only to the middle of the side. Other annulets, including the collar of joint 13 and the whole of 14 dorsally deep blue black, forming disconnected black parallelograms separated and centered by pale blue.

COMPARISON OF THE LARVÆ OF FOUR FORMS OF *Harpiphorus*.

Name.	Last Stage.	Ultimate Stage.
<i>intermedius</i> Dyar.	No white coating; marked with black varying from a few diffuse spots to heavy black squares; anal plate black.	Heavy black squares on a blue ground, yellow subventrally.
<i>tarsatus</i> Say. . .	With white coating; under which are black spottings not fully united into squares; anal plate black.	Heavy black squares on a blue ground, yellow subventrally.
<i>varianus</i> Nort. . .	With white coating; no spots; anal pale black.	Ground color all yellow with slight black spottings.
<i>versicolor</i> Nort. . .	With white coating; no spots; anal plate concolorous with body.	Ground color blue with slight black spottings, yellow subventrally.

Harpiphorus intermedius, var. nov.

Intermediate in coloration between *H. tarsatus* and *H. varianus*, the abdomen being black or nearly so, the hind tibiæ pale red with black apices. The front and middle tibiæ are reddish and the cheeks behind and below the eyes.

Bred from larvæ described as *H. tarsatus*, JOURN. N. Y. ENT. SOC., V, 21.

Harpiphorus testaceus Norton.

There is a published note (Insect Life I, 345) stating that the larva of this species was found on *Polygonum* and *Vitis*. However, on consulting the note books of the Department of Agriculture, I find that the larvæ refused these plants and it is pretty evident that they had been wandering after having defoliated their bush of *Cornus*. These particular larvæ were not bred, but others, stated in the notes to be "identical" were bred, and, though labelled *testaceus* correspond with my specimens of *varianus*. Some preserved larvæ bearing the same number (Dept. Agri., 3543) are also true *varianus*. The true *testaceus* seems not to have been bred as yet.

Schizocerus zabriskiei Ashm.

Leaf miners in Purslane (*Portulaca oleracea*), Bellport, Long Island, New York.

Stage I.—As in the next stage; width of head .25 mm.

Stage II.—Much as in the next stage, the markings faint; head smoky brown; width .35 mm.

Stage III.—The same; width of head .5 mm.

Stage IV.—Head rounded, a little higher than wide, smoky black, the region about the mouth pale; eye black; antennæ rudimentary; width .65 mm. Thoracic feet short, distinct and spreading, marked with black, visible distinctly from the lower side of the mine. Body colorless or faintly yellowish, the food in alimentary canal green; two dark spots on venter of thorax. Segments 3-annulate, with small blackish tubercles on each annulet; one on the first, four on the second reaching to the black spiracle, three on the third and a few on the subventral folds. Abdominal feet very small and short on joints 6 to 11 with also slight lumps that resemble feet on joints 12 and 13 anteriorly. Anal plate transverse, dusky black.

Stage V.—Head colorless, whitish, ocellus black; width .9 mm. Body all green, no marks, flattened; skin appearing granular from the concolorous, obsolete tubercles, the subventral ridge even spinulose. Thoracic feet pale, the abdominal ones obsolete; spiracles black; dorsal vessel dark.

The larvæ mine the leaves of purslane, leaving one leaf when exhausted and starting a fresh mine in another. Pupation in the ground. Several brooded.